EPSON®

Twinax Interface Card

C82315*

USER'S GUIDE
REDIENUNGSANI FITUNG
MODE D'EMPLOI
GUIA DEL USUARIO
MANUALE PER L'UTENTE

Errata to C82315* EPSON User's Guide for Software Revision 4.1

For all emulations

Host download is now supported on the parallel port as well as the IBM twinax port.

3812 emulation

1. X Point Forms XRess is now supported.
2. Escape character substituted when "logic&not E" (¬E) is received. Example: PCL command for underline = ESC & d0D (lB 26 64 30 44) can be sent as ¬ E&d0D
3. 10 CPI will print as 10.3 CPI when using A4 paper
4. Scalable font sod point sizes can he selected using a "logical-not F " (¬F) string. The command format is as follows:
   ¬ Fnnnnn,ppp where ppp=desiredpointsize(11099!&
   nnnnn = number of scalable font selected from the following list
   Example : ¬ F5687.25 will select the Times Roman font at 25 point

nnnnn	Scalable Foot
5687	Times Roman
5815	Times Roman Italic
5707	Ties Roman Bold
5835	Times Roman Bold Italic
34103	Sans Serif Medium
34231	Sans Serif Medium Italic
34123	Sans Serif Bold
34251	Sans Serif Bold Italic
33335	Sans Serif Condensed
33463	Sans Serif Condensed Italic
33355	Sans Serif Condensed Bold
33483	Sans Serif Condensed Bold Italic

5. New fonts added to support 3812 font numbers:

Typeface	Symbol Set	pitch	point	3812#
Courier	R-8	5	12	244
Courier Bold	R-8	5	12	245
Sonoran-Serif*	R-8	Prop.	8	751
Sonoran-Serif*	R-8	Prop	10	1051
Sonoran-Serif Bold*	R-8	Prop	10	1053
Sonoran-Serif Italic*	R-8	Prop	10	1056
Sonoran-Serif*	R-8	Prop	12	1351
Sonoran-Serif Bold*	R-8	Prop	16	1653
Sonoran-Serif Bold*	R-8	Prop	24	2103

* Uses Times Roman typeface

FCC COMPLIANCE STATEMENT
FOR AMERICAN USERS

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Pan 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment Is operated In a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used In accordance with the instruction manual, may cause harmful interference in which case the user will be required to correct the interference at his own expense.

This devise complies with Pan 15 of the FCC Rules. Operation Is subject to the following two conditions: (1) This device may not cause harmful interference. and (2) this device must accept any interference received, including interference that my cause undesired operation.

FOR CANADIAN USERS

This digital apparatus does not exceed the Class A limits for radio noise emissions from digitai apparatus as set out In the radio Interference regulations of the Canadian Department of Communications.

Le présent apparell numérique n'émet pas de bruits radioélectriques dépassant Ies limits applicables aux appareils numériques de Class A prescrites dans le règiment our le brouillage radioélectrique édicté par le Ministére des Communications du Canada.

WARNING

The connection of a non-shielded equipment Interface cable to this equipment will invalidate the FCC Certification of this device and may cause Interference levels which exceed the limits established by the FCC for this equipment. It is the responsibility of the user to obtain and use a shielded equipment interface cable with thfs device. When this equipment is attached to some printers. you should not leave cables connected to the printer's built-in connectors. See your printer's user's manual for details.

Changes or modifications not expressly approved by Seiko Epson Corporation. could void the user's authority to operate the equipment.

TWINAX INTERFACE CARD C82315*

USER'S GUIDE

SCHNITTSTELLENDARTE TWINAX C82315*

BEDIENUNGSANLEITUNG.

CARTE D'INTERFACE TWINAX C82315*

MODE D'EMPLOI

TARJETA DE INTERFACE TWINAX C82315*

GUIA DEL USUARIO

SCHEDA DI INTERFACCIA TWINAX C82315*

MANUALE PER L'UTENTE

APPENDIX

ANHANG/APPENDICE/APÉNDICE/APPENDICE

EPSON Twinax Interface Card

User's Guide

Contents:

INTRODUCTION

The Epson C82315* Twinax Interface Card allows you to connect your Epson printer to an IBM 34/38/38 or IBM AS400 computer system or to a remote controller connected to these systems.

This interface card provides your Epson printer with the following features:

- Emulation of the IBM 5219 or 3812 letter-quality printers as well as the IBM 4214 or 5224 matrix printers
- Conformance to IBM 5250 product-attachment specifications
- The ability to receive data through a multi-tap, twin-axial connected system at a maximum burst rate of 2 million bits per second
- The ability to receive data through either the twin-axial connector or through a parallel connector, allowing you to print from both the twin-axial system and a PC system
- Automatic switching between the twin-axial connector and parallel port based on selectable time-out periods
- The ability to bypass IBM emulation and send commands directly to the printer, allowing you to take advantage of unique Epson printer capabilities
- A special setup mode for changing various interface settings that allows you to make yes or no answers to printed questions
- A Display Station setup mode that displays setup information on an IBM system display station; you can then change the settings on the screen as necessary.

You can use the Epson C82315* Twinax Interface Card in the following Epson printers:

DLQ-2000	LQ570/1070	LQ-870/1170
SQ-870/1 170	EPL-4000/4100	EPL-8000/8100
Action Printer 5000/5500	ActionLaser II	

You may be able to use this interface on other Epson printers as well. For a list of optional interfaces that can be used with your printer, see your printer's user's manual.

SETTING UP THE INTERFACE CARD

Follow the instructions in this section to install this interface in your Epson printer.

UNPACKING THE INTERFACE

Check that in addition to this user's guide, your interface kit includes all the items listed below, and that none has been damaged during shipping.

Twinax interface card (in a plastic anti-static bag)
Twin-axial "V-cable' connector
Parallel printer sharing cable

Caution: This interface can be harmed by static electricity. Leave the interface card In the anti-static bag until you are ready to install it in your printer.

SELECTING THE EMULATION

Before you can use the printer, you must tell the host computer which IBM printer the interface is emulating. Ask your system manager or operator to make the settings for you.

The following table shows you the recommended settings to make in your host system:

Emulation and host system printer setting selection

If your system is...	and the Epson printer you are using is...	the emulation you should select is...	and you should select one of the following host system settings
System 36, System 38, AS400 and 5294 or 5394 remote controller	laser printer (using HP commands)	3812	3812-1
System 36, System 38, AS400 and 5294 or 5394 remote controller	24148 element dot matrix printer or laser printer (using ESC/P commands)	5219	5219 mdl D02

If your system Is...	and the Epson printer you are using is...	the emulation you should select is...	and you should select one of the following host system settings
System 36, System 38, AS400 and 5294 or 5394 remote controller	9/24/48 element dot matrix printer or laser printer (using ESC/P commands)	4214	4214 model 2
System 34 or 5251 m12 remote controller	9/24/48 element dot matrix printer or laser printer (using ESC/P commands)	5224	5224 (2P) 5225 (2P) 5258 (P)

You should keep the following in mind when selecting the emulation.

Only the 3812 emulation supports HP laser printer commands.

If you have a choice between the 5224 and 4214 emulations, you should select 4214. The 4214 emulation adds control of the following features: lines per inch, pitch, graphics, print quality, and single-sheet handling.

If your printer supports Epson Job Language (EJL) commands, do not change the printer mode using the EJL commands or the command-pass-thru feature while the interface is installed. Also you may not be able to change the printer mode using the control panel.

Never select the PostScript™ printer mode while this interface is installed.

PREPARING TO INSTALL THE INTERFACE CARD

Before installing this interface card you may need to set several jumpers, depending ***on*** the following factors:

The type of Epson printer you are using
The type of IBM printer you want the interface to emulate
The type of twin-axial connector your host system uses

Also, because this interface can be damaged by static electricity, you should prepare the interface card for installation according to the procedure below:

1. While the interface is still in its anti-static bag, place it next to your printer.

2. Place the twin-axial cable from the host computer on top of the anti-static bag; make sure the metal connector on the cable is in contact with the bag.

3. Remove the interface card from the bag and place it on top of the bag next to the twin-axial cable.

4. Set the jumpers on the interface card according to the instructions in the following section.

SETTING THE JUMPERS

A jumper is a small, square plastic object that fits over two terminals (prongs) on the interface card. To connect a jumper, place the jumper over both terminals. To disconnect a jumper, place it over one terminal only. All jumpers are connected when shipped from the factory.

The C82315* interface card has three jumpers, labeled as J2, J5, and J6. The settings for J5 and J6 are different for the different emulations. After deciding on an emulation, set the jumpers according to the tables below.

Applies to all emulations

Jumper	Connected	Disconnected
J2	Normal twin-axial cable	Twisted-pair 'passive star panel' cable Use only if problems found on this type of cable.

Dot-matrix 4214/5224 printer emulation

Jumper	Connected	Disconnected
J 5	Sends a printer ID code for an IBM 4214 model 2 to the host	Sends a printer ID code for an IBM 5224 model 1 to the host
J6**	Sends Epson ESC/P 9-pin FX Commands to the printer	Sends Epson ESCIP 24145pin LQ commands to the printer

Letter Quality 5219 emulation

Jumper	Connected	Disconnected
J5	Selects 5219 ESWP letter quality emulation	Invalid selection
J6**	Sends Epson EWP 9-pin PX commands to the printer	Sends Epson ESC/P 24/48 -pin LQ commands to the printer

** If the interface's self test prints a name for your printer, you do not need to set the J6 jumper.

Letter Quality 3812/HP Laser printer emulation

Jumper	Connected	Disconnected
J5	Invalid selection	Emulates an IBM 3612 printer using HP LaserJet II commands
J6*	Sets the page orientation automatically when you use the Computer Output Reduction feature	Sets a fixed page orientation when you use the Computer Output Reduction feature

* When you choose fixed page orientation, the orientation is selected by the settings of switches 6 and 7.

INSTALLING THE INTERFACE CARD

After making any necessary changes in the jumper settings, you should install the C82315* Twinax Interface Card in your printer.

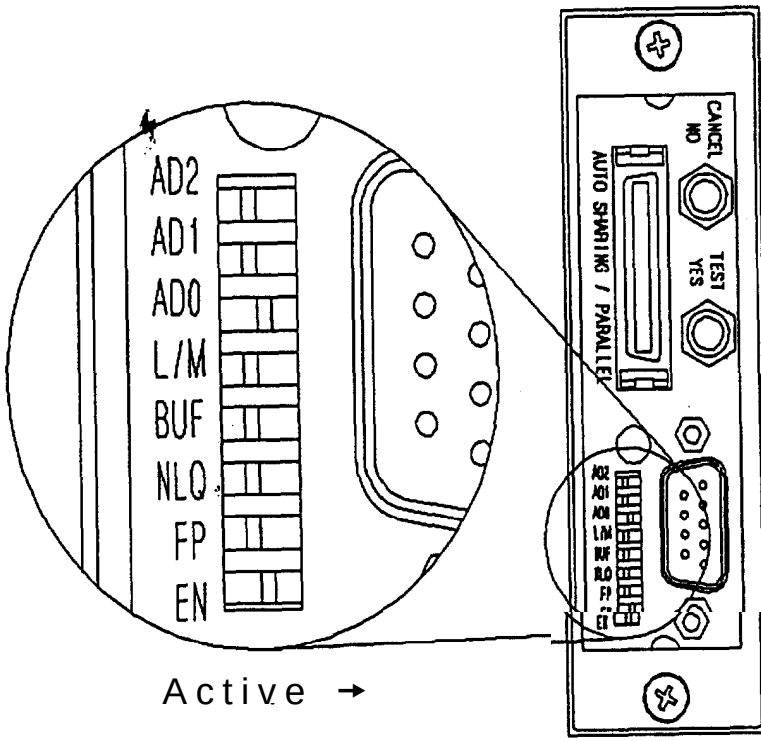
Instructions on installing this interface card are included in your printer's user's guide. Follow these steps carefully.

SETTING THE SWITCHES

The C82315* Twinax Interface Card comes with eight switches that are used to determine many of the default settings of the interface card. Details on these settings are listed in the following section.

You can set the switches located on the rear side of the card at any time. However, the interface only checks these settings when the printer is first turned on. Always turn the printer off and then back on again after changing a setting.

Change the switch settings with a pointed object, such as a ball-point pen. A switch is on when in the upper position (if the interface is Installed horizontally) or in the right position (if the interface is installed vertically), as shown below.



SWITCH SETTINGS

You can select the features listed below by changing the switches to the settings indicated. Settings for switches 6 and 7 are different if HP LaserJet II (IBM 3812) emulation is selected (switch 4 is on and jumper J5 is disconnected).

Switch	Cable (Device) Address (ask the system manager for the correct address)							
	0	1	2	3	4	5	6	7 Test
1	Off	Off	Off	Off	On	On	On	On
2	Off	Off	On	On	Off	Off	On	On
3	Off	On	Off	On	Off	On	Off	On

Switch	Off	On
4	Emulates an IBM 4214/5224 printer	Emulates an IBM 5219/3812 printer
5	Prints normally	Prints buffer diagnostic test

Non-HP LaserJet II mode

Switch	Off	On
6	Selects draft printing as the default	Selects LQ printing as the default
7	Passes all commands from the host on to the printer. Select this if you want to set pitch and print quality from your software.	Passes all commands from the host on to the printer except character pitch and print quality commands. Select this if you want to set pitch and print quality from vour orinter's control panel.

HP Lase Jet II mode

Switch	Off	On
6	Sets orientation automatically during Computer Output Reduction	Sets orientation to landscape during Computer Output Reduction
7	Sets orientation automatically during Computer Output Reduction	Sets orientation to Portrait during Computer Output Reduction

Switch	Off	On
8	Selects the C823W interface card	Selects the printer's built-in interface

PERFORMING A SELF TEST

To verify the interface is installed and the settings are correct, perform an interface self test according to the following steps.

1. Turn on the printer and load paper. Make sure the cable address (set with switches 1, 2, and 3) is not set to 7.

2. Press the TEST button on the interface. The printer then prints out a list of the jumper, switch, and feature settings, similar to the self test sample printout shown in Appendix A-l.

> The name of the printer printed in the self test may differ from your printer's actual model name.

3. Turn the printer off to end the self test.

If the warning message is printed, it indicates the interface's emulation mode differs from the emulation mode selected by your printer.

CONNECTING TO THE HOST COMPUTER SYSTEM

After you confirm the interface is installed and settings are correct, you can connect it to the host system according to the following steps.

1. Connect the twin-axial connectors of the twin-axial V connector to your host computer system cable.

2. Insert the twin-axial V serial cable into the 9 pin twin-axial serial connector on the interface.

3. Tighten the thumbscrews on both sides of the twin-axial serial cable connector to secure it to the interface.

MAKING ADDITIONAL SETTINGS

In addition to setting the switches and jumpers described in Setting Up, you can make interface or printer settings with the C82315* interface in four more ways: command-pass-thru, interface setup commands, display station setup mode, and memory setup mode.

COMMAND-PASS-THRU

This feature allows you to insert commands within your print files that are sent directly to the printer, without being processed first by the interface. You can then take advantage of the advanced features of Epson printers (such as color printing and super/subscripts) that are not supported in IBM printers.

Follow the steps below to send command-pass-thru commands.

1. Convert the Epson printer commands you wish to send into two-digit hexadecimal codes. See your Epson printer's user's guide for a list of all commands; the hexadecimal values of each command are shown there.

2. Inside the document you are sending to the printer, insert the following characters:

&%

When the interface receives these two characters, it knows that the characters following are commands in hexadecimal format. (These are the default characters: you can define different characters with interface setup command 06 described in Interface Setup Commands.)

3. Immediately following the &% characters, insert your commands in hexadecimal format; the interface recognizes characters from 00 to FF only (alphabet characters must be upper case).

You may insert one or several commands, as long as they are all in hexadecimal format, and they are commands that are used by your printer in its current mode. You may also insert spaces between hexadecimal pairs to increase visual clarity; however, do not put any'spaces after the first &% characters or before the last &% characters.

4. After you have inserted all your commands, insert the &% characters again. This tells the interface that command-pass-thru Is finished and the data following is normal print data.

Note:

Although these characters are displayed in your document on the display screen, the interface treats them as commands and does not print them. If part of the sequence is printed, you have made an error in entering the codes; check your document and make sure you are using the correct format and hexadecimal characters.

Avoid sending codes that would move the print position during command-pass-thru. Since the interface does not process these commands, it cannot keep track of the print position changes; this may affect the position of following characters and page layout.

You can also send these commands by typing them on the screen and pressing the screen print key.

Example:

To print the word 'scalable" in the following sentence in bold using Epson ESC/P commands, you could use command-pass-thru as follows (the bold on/bold off commands are ESC E and ESC F):

Epson ESC/P 2 offers advanced &% 1B 45&%scalable&%1B46&% fonts for laser-like printing at dot-matrix prices.

USER-DEFINED COMMAND-PASS-THRU STRINGS

You can define up to eight of your own custom command-pass-thru command strings (0 to 7) to be stored in interface memory. The method of defining strings is described in the following section.

Once you have defined these strings, you send them in the following format:

&%U1

The U1 tells the interface to send user-defined string number 1 to the printer.

For example, you could define user-defined string 1 to be the command string to turn on bold printing, as used in the example in the previous section. Then, instead of inserting the &% 1B 45&% command in your text, you would insert only &%U1.

INTERFACE SETUP COMMANDS

You send these commands in a similar manner to command-pass-thru, but the commands are used to make interface settings instead of being sent on to the printer. These interface settings control printing regardless of the printer model connected.

The format of the interface setup commands is as follows:

&%Z##,P

The 8%Z indicates that an interface setup command follows. The ## is a two-digit number, indicating the number of the command. The P is the parameter of the command: the length of the parameter varies by command.

A table of commands and parameters, as well as a short description of each follows.

Command Number	Parameters Name/Description		Command Examples
01	Control the setup memory, Resets or saves settings in the interface's setup memory		
	1	Reset to factory settings	&%Z01 ,1
	2	Store the current-setting in permanent memory	&%Z01,2
02	Select the default international character set Selects the international character set used. See your printer's user's guide for a list of characters affected by international character set selection.		
	00	Multinational	&%Z02,00
	01	UWCanadaCommand	&%Z02,01
	03	Belgium	&%Z02,02
	04	Brazil	&%Z02,03
	05	Canada/French	&%Z02,04
	06	Denmark/Norway	&%Z02,05
	07	Finland/Sweden	&%Z02,08
	08	France	&%Z02,07
	09	Italy	&%Z02,08
	10	Japan	&%Z02,08
	11	Japan (English)	&%Z02,10
	12	Portugal	&%Z02,11
	13	Spain	&%Z02,12
	14	Spanish speaking	a%Z02,13
	15	United Kingdom	&%Z02,14
			&%Z02,15
03	Selects the character table used (PC 850 is the recommended setting)		
	02	PC850	&%Z03,02
	03	HP Roman 8	&%Z03,03
04	Not used		

Command Number	Parameters Name/Description	Command Examples
05	Control paper size selection (laser printers only) Makes paper size settings	
	01 Feeds paper size selected by the host computer	&%Z05,01
	02 Feeds any paper size	&%Z05,02
	03 Feeds A4 size paper	&%Z05,03
06	Select alternate command-pass-thru delimeter Selects the characters that both begin and end the command-pass-thru feature. You can select any two characters, as long as the first is not an ampersand (a). The default value is the &% characters.	
	xx Selects the two characters represented by the XX characters.	&%Z06,*!
07	Select print-complete handling Tells the interface when to send a print-complete signal. (Check your self test results to see If your printer supports true print complete.)	
	1 Selects early print-complete handling (all data has been sent to printer's buffer, but printer may still be printing)	&%Z07,1
	2 Selects true print-complete handling (all data has been sent to printer, and printer has finished printing)	&%Z07,2
08	Set printer sharing timeout period Sets the amount of time (in seconds) the printer waits for additional data before switching between the twin-axial host system and the PC system connected to the auto-sharing/parallel connector (8 seconds is the default). If your printer supports intelligent emulation switching (IES) make sure your printer's IES timeout period is less than this setting.	
	xx Selects a waiting period of XX seconds	&%Z08,05
09	Parallel port initialization string Defines a string of characters that is sent to the printer when the parallel port is activated (up to 25 characters can be included in the string)	

Command Number	Parameters	Name/Description	Command Examples
	(HH..HH)	Defines the string of hexadecimal values that are sent to the printer as HH..HH	&%Z09,0(1B40)
10		Define User Custom command-pass-thru strings for details. Defines up to eight strings (0-7) of commands (up to 25 characters can be included in the string). See User-defined command-pass-thru strings for details.	
	#(HH..HH)	Defines string number # to be the character string defined by the hexadecimal values HH..HH	&%Z10,3(1B45)

DISPLAY STATION SETUP MODE

When the printer is connected to a twin-axial cable that is also connected to a display station, you can display an interface setup screen showing various setup parameters. You can then change these parameters and save them in the interface memory.

See Appendix A-2 for an example of the setup screen.

Follow the steps below to change settings in display station setup mode.

1. Turn off the printer and all devices connected to the same twin-axial cable.

2. Disconnect the twin-axial cable from the IBM host computer, and make sure that at least one display station is connected to the cable and is turned on.

3. Turn off switch 8 to deactivate the twinax interface. Then make sure you have set a valid address other than 7 (switches 1,2,3), and turn on the printer.

4. Press the TEST button on the interface. The interface setup screen appears on the display station.

5. Use the cursor keys to move to settings you want to change. Use the backspace to delete old settings, then type in the new settings.

6. When you finish changing settings, press the Enter key to save the new settings in the interface memory.

7. Turn off the printer and return switch 8 to the on position to resume using the twinax interface.

MEMORY SETUP MODE

You can have the printer print out various interface settings one at a time and then change them by responding to printed questions using the YES and NO buttons on the interface.

Follow the steps below to change settings using memory setup mode.

1. Enter memory setup mode by holding down both the YES and NO buttons while turning on the printer. The printer then prints out the first setting and asks the following:

Do you want this changed? (Yes/No)

2. If you then press YES, the interface changes thesetting to the next available parameter. It then prints out the new setting and asks again if you want to change the setting. The printer repeats the question for all the parameters until you press NO, indicating you do not want to change the current setting.

If you answer NO the first time, the printer goes on to the next setting.

3. Continue to answer the questions and make desired setting changes until the following question is printed:

Do you wish to save current selections? (Yes/No)

4. Press YES to save the settings you have just made. Press NO to return to the old settings and exit memory setup mode.

Note:

You may need to use the line feed button on the printer's control panel to advance the paper so you can see the printed messages.

This method of making settings is not recommended for laser printers; to see the questions, you would have to eject one page every time a question is printed.

The settings you can make in memory setup mode are listed below. For details on the settings, see the descriptions for the command of the same name in the section on interface setup commands.

Select the default international character set.
Select the character table
Control paper size selection
Select print-complete handling

PRINTER SHARING

If the C82315* is connected to a PC with the Parallel Sharing Cable, the PC must be turned on.

The C62315* Interface is equipped with two interface connectors: a serial connector for connecting the twinax V-connector and a parallel connector. By connecting a PC to the parallel connector, you can share the printer between the PC and Twinax systems.

When you first turn the printer on, the twinax connector is selected. If the twinax system sends no data for a certain period, and the PC system sends data, the interface switches to the parallel connector. (The period the interface wafts before switching can be set with Display station Setup or Command 06 described in Interface Setup Commands--the default is 8 seconds.)

After a print job is completed from either connector, and no additional data is received for a certain period, the interface monitors both connectors for the next data.

Since printing alternates between the twinax and PC systems during printer sharing, it is recommended that you reset the printer at the beginning of each print job. Otherwise, page layout, character spacing, and other settings remain from the previous print job.

You can use Command 09 described in Interface Setup Commands to define a string of up to 25 characters that are sent to the printer each time the interface switches to the parallel connector.

The interface automatically restores settings for character pitch, lines per inch, and page length when lt returns to twinax printing.

EMULATION DETAILS

The C82315* interface emulates several IBM printers. However, you should be aware of slight differences in operation caused by mechanical and other differences between IBM and Epson printers.

The differences for each emulation are described in the following sections.

4214/5224 EMULATION

Epson printers and 4214/5224 printers have the following differences.

LINE-FEED INCREMENT

A 4214 printer advances paper in 1/120-inch increments for continuous paper, and 1/10-inch increments for single-sheet paper. 5224 printers use a 1/72-inch increment. Epson O-pin printers advance paper in 1/216-inch increments, and 24/48 printers advance paper in 1/360-inch increments. The C82315* interface calculates the difference in paper advancing increments and corrects for errors as printing proceeds.

PAPER BINS

A 4214 printer can select from three paper bins; an Epson printer can select from two. If you select bin 3, the Epson loads paper from bin 2.

GRAPHICS PRINTING

You can create graphics on the 4214 printer by sending the Load Alternate Character (LAC) command. This is the command used by the IBM programs APF and BGU. This command defines a pattern to be printed in place of a certain character, similar to the Epson ESC/P user-defined character feature.

The C82315* interface accepts two variations of the LAC command: the LAC-1 and LAC-2 commands. The LAC-1 command defines a 9-dot wide by 8-dot high pattern while the LAC-2 command defines a 10-dot wide by a 8-dot high pattern.

The C82315* interface prints graphics data using the quad-density, 240 dot per inch graphics mode. In order to maintain the proper pitch, each character should be defined with the following widths:

10 CPI Graphics - 24 Columns
12 CPI Graphics - 20 Columns
15 CPI Graphics - 16 Columns
17.1 CPI Graphics - 14 Columns

Because the interface adjusts data to fit in the number of columns available on Epson printers, printed characters may not be perfectly symmetrical.

NOTE: When printing high-density graphics, you may not be able to print adjacent dots. This may cause gaps when printing bar codes, so bar code printing is not recommended.

5219 EMULATION

The font ID numbers sent to a 5219 printer select the Epson character pitches and typefaces shown below; the ID numbers marked with a + are the recommended settings.

	10 CPI:	12 CPI:	15 CPI:	PROFIT
Roman	13+, 5+	82, 87+	222+	160+
Sans Serif	14, 26+	84+, 91+	224,225+	159+
Courier*	11+	85+	223+	158+
Script*	10,20+	80+	220	161
Prestige*	12+	86+	221+	162

*Not available on 9-pin printers.

3812 EMULATION

Epson printers and 3812 printers have the following differences.

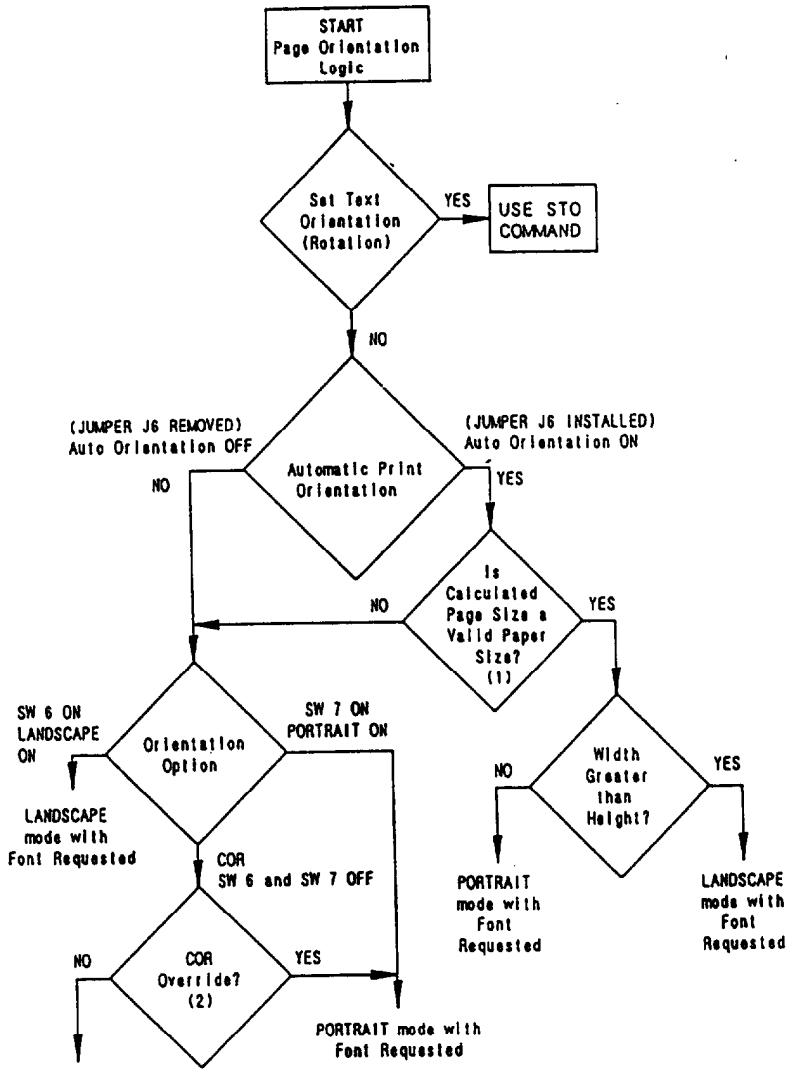
PAPER TRAY OR CASSETTE

If you have an optional paper tray or cassette installed in your Epson laser printer, you should use SelecType on your printer's control panel to select optional for the input setting. See your printer's user's guide for details on using SelecType.

COMPUTER OUTPUT REDUCTION

Epson laser printers cannot print on 13.2 x 11 inch paper, so you may need to reduce or rotate the image to fit data processing reports onto the paper available.

The chart on the following page shows how to print data processing reports onto smaller size paper.



Computer Output Reduction (COR)

LANDSCAPE mode REDUCED

Verical spacing is 8LPI

0.5' Margins top end lelt

10 pitch fonts lo 13 pitch

12 pitch fonts lo IS pitch

IS pitch fonts to 19 pinch

(I) Yield Paper size is less than or equal to 1 1/2' x 14'

(2) Portrait Orientation (lasted at COR) can be Selected by:

Size OCI: Text -YES or Notate-0

size CL :priority [•STD] or (•NLQ) or

AS/400 : PRIORITY (STD) and Pagrit (•COM)

FONT ID

The 3812 emulation uses IBM font ID's to switch from one HP font to another. Only certain IBM font ID's can be used as the system default. These are noted by an asterisk (*) in the Font ID table in Appendix A-3 of this manual.

You specify the default font ID for your printer when you configure the printer on the IBM host. Have your system operator set your default to the font ID you use most and then change as necessary with a printer override, OCL command, or word processing font ID. (See Appendix A-3 for font ID table.)

PAPER SIZE AND ENVELOPES

The 3812 emulation supports the following paper sizes:

Letter	8.5 x 11 inches
Legal	8.5 x 14 inches
A4	210 x 297 mm (8.27' x 11.69')
Executive	7.25 x 10.5 inches

Epson printers support the following envelope sizes:

Commercial 10	9.5 x 4.125 inches
Monarch	7.5 x 3.875 inches
DL	220 x 110 mm (8.66' x 4.333
CS	229 x 162 mm (9.02' x 6.38")

You must send the paper and envelope dimensions from the IBM host to the printer in order for the proper size to be selected. You can use interface setup commands to select A4 size paper as the default or to feed paper regardless of size.

JUSTIFICATION

The 3812 emulation supports right hand justification for all fixed pitch fonts as well as proportional font IDs 158, 159, and 162 (found in the 5410 font cartridge).

INTERFACE TEST MODES

In addition to the self-test described in the section on installing the interface, the C82315* has four other tests you can perform: hex print, communications test, interface diagnostics, and the interface diagnostic loopback.

HEX PRINT

During hex print, the printer prints the data received in hexadecimal format. You can then check if the data you are sending is reaching the printer.

The printer prints this hex data on a grid corresponding to the data's position in the buffer. If the hex data represents a printable character, that character is printed to the right of the hex data.

Turn switch 5 on to enter hex print mode.

See Appendix A-4 ***for*** hex print sample.

COMMUNICATIONS TEST

The C82315* can mimic a host computer and send commands to the twin-axial cable. You can use this feature to test a second printer connected to the same twin-axial cable.

Follow the steps below to perform the communications test.

1. Make sure that both printers are set to the same-cable address, and that the Epson printer is turned off.

2. Make sure that the cable end attached to the second printer is set for termination, or uses an auto-termination cable, and that the cable is not connected to a host system.

3. Turn switch 5 on to print the buffer diagnostic test.

4. Turn on the Epson printer; then press the TEST button on the inter face.

The second printer should then print the buffer diagnostic test header, print out any errors encountered in communications, and then print the EBCDIC character set.

5. After completing the test, ***turn*** off the Epson printer and return switch 5 to the off position.

INTERFACE DIAGNOSTICS

During interface diagnostics, the interface transmits data to itself and then analyzes how that data is processed. If an error is detected, an error message is printed on the printer. A list of error messages is listed at the end of this section.

Follow the steps below to perform interface diagnostics.

1. Make sure the printer is turned off.

2. Disconnect the V-connector from any twin-axial cables (but leave it connected to the interface). Since the interface transmits data to itself during this test, leaving it connected to the twin-axial cable could disrupt the twin-axial system.

3. Write down the positions of switches 1, 2, and 3 (you need to return them to their initial positions after the test is completed). Then turn switches 1, 2, and 3 on. This selects cable address location 7. Address 7 is used only during interface diagnostics and interface diagnostic loopback.

4. Turn on the printer; then press the TEST button on the interface. The printer then performs the test and prints the following:

TEST SEQUENCE COMPLETE

The printer performs the test sequence over and over; error messages are printed between the TEST SEQUENCE COMPLETE" messages.

5. After you are finished running the test, turn the printer off and reset switches 1, 2, and 3 to their original position.

INTERFACE DIAGNOSTICS ERROR MESSAGES

The error messages and explanations are listed below.

If an error occurs, the following tests may not be performed.

OUTPUT TIMING ERROR

The twin-axial output circuits are not responding to the microprocessor as expected. This could be caused by a non-functioning circuit or by a terminated cable not being attached to the interface.

UNEXPECTED VECTOR or IMPROPER BYTE VECTOR

The interrupt handling process received an improper interrupt value. Possible causes are initialization problems, non-functioning circuits, or microprocessor problems.

ERROR IN POLL ADDRESS X

A poll test was sent to the indicated address but was not received properly. This could be caused by a terminated cable not being properly installed, a circuit that is non-functioning, or intermittent connections.

INCORRECT DATA ON POLL TO ADDRESS X

A poll was sent to the indicated address and was detected as a poll; however, the data received was not the expected data. This could be caused by a problem with the twin-axial receiver circuitry.

NO INTERRUPT ON DATA

A byte of data (not a poll) was sent and the receiver circuitry did not interrupt the microprocessor. This could be caused by problems in the receiver circuitry, or problems with the microprocessor interrupts.

OUTPUT DATA AVAILABLE BIT BAD

The transmitter timing is not staying busy for the proper period. This indicates an ASIC failure.

INPUT DATA AVAILABLE BIT BAD

The bit signaling that data was received was not set as expected. This could be caused by not having a properly terminated cable attached, a driver circuitry failure, a receiver circuit failure, or an ASIC failure.

NO INTERRUPT ON BAD PARITY or WRONG INTERRUPT ON BAD PARITY

This test sends a transmission with the parity purposely invalid to test the proper reaction. Either no interrupt or the wrong interrupt was received in this test. This indicates an ASIC failure.

INTERRUPT W/O NMI ON POLL TO ADDRESS X

During a poll test, the transmission was received as data; not as a poll, This indicates an ASIC failure.

INPUT NOT INDICATING BUSY

This is an ASIC internal test during a transmission, and indicates an ASIC failure.

TWO BYTE DATA CHECKS BAD

This test verifies multi-byte data transmissions for proper data. A failure could be caused by a -5-volt supply problem, a transmitter circuit failure, a receiver circuit failure, or an ASIC failure.

OVERFLOW COUNTER BAD

This tests the protection circuit-in the ASIC designed to prevent a host failure from over-filling the interface buffer and causing an error in operation. This message indicates an ASIC failure.

BAD DATA, EXPECTING XX RECEIVED XX

A byte of data was sent, and the receiver circuitry interrupted the microprocessor. However, when the data was checked, it was not the same as when it was sent. This would indicate a problem with the twin-axial circuitry data paths.

PARITY ERROR DETECTED or PARITY FAILURE

This error indicates that the twin-axial receiver detected a parity error on receiving polls or data. This would indicate an error in the parity generation by the twin-axial output, malfunctioning of the parity checking circuit of the twin-axial receiver, or a poor cable connection.

INTERFACE DIAGNOSTIC LOOPBACK

Interface diagnostic loopback is essentially the same as interface diagnostics; the only difference is that no error messages are generated. A qualified technician can use this test to check the circuitry with an oscilloscope.

Interface diagnostic loopback is performed in basically the same way as interface diagnostics; however, you must turn switch 8 off before starting. Always return switch 8 to the on position when you are finished with interface diagnostic loopback.

SPECIFICATIONS

The C82315* interface specifications and the C82315*'s parallel interface specifications are listed below

C82315* INTERFACE SPECIFICATIONS

input Protocol:	IBM 5250 twin-axial protocol, parallel input data
Output Protocol:	EPSON TYPE B internal interface connection
Receive Data Rate:	5250 protocol = Maximum burst: 2 million bits/second Effective rate: 1 million bits/second
Data Buffering:	Dual 256 byte buffers for received twin-axial data 16-byte twin-axial command buffer Single byte parallel data buffer
Language Support:	16 major language selections; same language character sets as supported by IBM 4214
Supported printer character sets:	IBM Code Page 850 H.P. Roman 8
Connectors:	DB9 connector for twin-axial T-cable connection. 36-pin (50 mil) parallel connector 36-pin internal printer connector
Indicators:	1 LED showing Line Sync. This light indicates the following:

FLASHING - The interface card is in a diagnostic mode.

ON - The C82315* is communicating with the Epson printer and the host.

OFF - The C82315* and the printer are communicating properly, but the interface is not communicating with the IBM host. In other words, there is no

Line Sync between host and interface.

Switches: 8 SIP piano switches for device address, emulation mode, buffer print, print quality, and interface enable

Push Button for TEST/YES

Push Button for CANCEL/NO

Selection Jumpers: 3 hardware configuration shorting jumpers

Twin-axial Connection: Both cable-thru and automatic termination available using provided V-connector cable

Power Requirements: All power supplied by the printer

Processor: Z80A CMOS

Memory: 8 Kbytes of static memory

PARALLEL INTERFACE SPECIFICATIONS

Signal Pin	Return Pin	Signal	Parallel Cable Pin	Direction	Description
1	19	STROBE	1	IN	Strobe pulse to read data in. Pulse width must be more than .5 sec. at the interface.
2	20	DATA1	2	IN	These signals represent information in bits 1 to 8 of parallel data respectively. Each signal is HIGH when data is logical 1 and LOW when it is logical 0.
3	21	DATA2	3	IN	
4	22	DATA3	4	IN	
5	23	DATA4	5	IN	
6	24	DATA5	6	IN	
7	25	DATA6	7	IN	
8	26	DATA7	8	IN	
9	27	DATA6	9	IN	

Signal Pin	Return Pin	Signal	Parallel Cable Pin	Direction	Description
10	28	ACKNLG	10	OUT	A LOW pulse of minimum width of 4 µ sec. A low indicates that data has been received and that the printer is ready to accept more data.
11	29	BUSY	11	OUT	A HIGH signal indicates that the printer cannot receive data. The signal goes HIGH in these cases: -Data entry, for each character --When off line or in error state -When serving the IBM host and a byte of parallel data is received.
12	30	PE	12	OUT	HIGH when the printer is out of paper.
13	--	SLCT	13	OUT	Pulled up to +5v through a 3.3K ohm resistance.
14		AUTO FEED	14	IN	THIS SIGNAL IS NOT SUPPORTED BY THE C82315* INTERFACE. (Defined by many printers to add a LF to each CR. The IBM 5250 protocol do not allow support this signal.
15	--	NC	--	--	Not used
16	--	GND	19	--	Logic ground
17	--	CGND	--	--	Chassis ground

Signal Pin	Return Pin	Signal	Parallel Cable Pin	Direction	Description
18	-	NC			Not used
19-30	-	GND	21-24		Twisted pair ground returns listed above
31		INIT	16	IN	Defined to reset and dear the printer when LOW: THE RE-SET AND CLEAR ARE NOT SUP-PORTED BY THE C82315*, As the IBM host cannot be in-terrupted by this signal. An ACKNLG is generated for handshaking.
32	-	ERROR	15	OUT	This signal goes LOW when the printer is in an error state such as out Of p a p e r .
33	-	GND	25		Logic ground
34	-	NC			Not used
35	-	HIGH			Pulled up to +5v through a 3.3K ohm resistance
36	-	SLCTIN	17		NOT SUPPORTED

NOTE:

The parallel connector is a DDK type DHA-36 or equivalent.

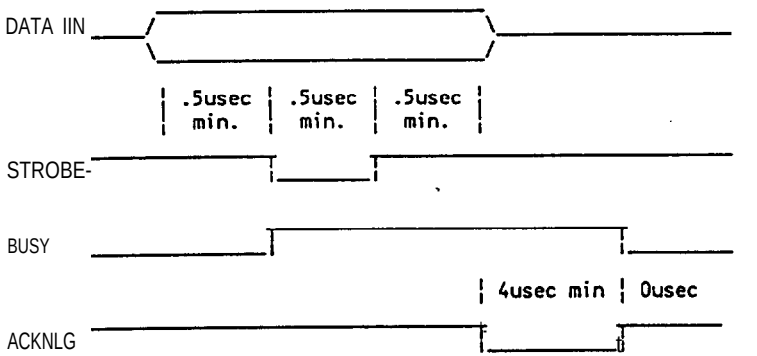
The column heading 'DIRECTION' refers to the direction of signal flow as viewed from the C82315* interface.

'RETURN' denotes the twisted-pair return, to be connected at signal ground level. For the interface wiring. be sure to use twisted-pair cable for each signal and to complete the connection on the return side. The cable should be shielded and connected to the chassis of the host computer and printer.

All interface conditions as based on TTL levels. Both the rise and the fall times of each signal must be less than 0.2 u sec.

Data transfer is carried out by observing the ACKNLG or BUSY signals. Data transfer to the printer occurs only after receipt of the ACKNLG signal or when the BUSY signal is LOW.

TIMING



Data must be present a minimum of 0.5 u sec before and after a minimun 0.5 µ sec STROBE Pulse. BUSY goes high before the end of the STROBE signal and remains high until the end of an ACKNLG pulse of' minimun 4 µ sec.

EBCDIC CHARACTER TABLES

PC850 character table

See Appendix A-S for an example of the PC850 character table.

Note: PC850 is the recommended character table for matrix emulations.

HP Roman 8 character table

See Appendix A-6 for an example of the HP Roman 8 character table.

Note:

This character table is available only when HP emulation is selected (3812 emulation).

APPENDIX A-1

Anhang A-1 / Appendice A-1 / Apendice A-1 / Appendice A-1

Sample printouts - Self Test
Druckmuster - Selbsttest
Exemples d'impression - Autotest
Ejemplos de impresión - Auto-test
Esempi di stampa - Test automatico

```
EPSON CS2315. TWIN-Ax INTERFACE
COPYRIGHT (C)1991 SHERWOOD DIGITAL ELECTRONICS
REV 3.4 SOFTWARE
INSTALLED IN EPL-4000  WITH CURRENT EMULATION ESCP24-84

Switch and Jumper Selections:

Device Address . . . . . : 0
Twin-ax cable drive selected.....: Normal
Self Test (Buffer Print).........: Off
IBM-Printer Emulated...;.........: 4214
Default print quality............: DRAFT
Pitch and Print Quality.. . . . . Host Control
EPSON command set.. . . . . LQ

Active Configuration Selections:

02 - Language.. . . . . 00 -  Multinational
03 - Character Set Option.. . . . . Code Page 850
04 - Printer Options.. . . . . Normal
05 - Laser Feed Options..... .... Feed Host $election
06 - Alternate Delimiters.. . . . . &%
07 - Print Complete method.......: Only Early Print Complete Supported
08 - Printer Sharing Timeout.....: 08
09 - Parallel Port Initialization:

10 - User Defined Strings......:
 u0:
 u1:
 u2:
 u3:
 u4:
 u5:
 U6:
 u7:

EBCDIC to ASCII Translate Table

   40 50 60 70 80 90 A0 B0 CO DO LO FO
0: 20 26 20 9B 9D F8 E6 BD 7B 7D SC 30   &-ø@°µC{}\0
1: 20 82 2F 90 61 6A 7E 9C 41 4A 00 31   é/Éaj~£AJ-1
2: 63 88 86 D2 62 60 73 BE 42 48 53 32  âêÅ£bks¥BKS2
3: 84 89 8E D3 63 6C 74 FA 43 4C 54 33  äëÄÉclt·CLT3
4: 85 8A 07 D4 64 6D 75 9F 44 4D 55 34  àèÀÈdmuƒDMU4
5: A0 Al 05 Db 65 6E 16 F5 45 4C 56 35  áíÁÍenv§ENV5
6: C6 0C Cl D7 66 6F 71 F4 46 4F 57 36  ãìÃÎfow¶FOW6
7: 66 88 8B D8 67 70 78 AC 47 50 56 37  âÌÂÏgpx¼GPX7
a: 87 8D 80 DE 68 71 79 AB 48 51 59 30  çìÇÎhqy½HQY8
9: A4 El A5 60 69 72 7A F3 49 52 5A 39  ñßÑ`irz¾IRZ9
A: 5B 5D 7C 3A AE A6 AD AA 2D FB FD FC  [¦:«¦¬ª-³²³
B: 2E 24 2C 23 AF A7 A8 B3 93 96 E2 EA  .$,#»º¿¦ôûÔÛ
C: 3C 2A 25 40 DO 91 Dl EE 94 81 99 9A  <*%@ðæÐ¯öüÖÜ
D: 26 29 SF 27 EC 87 ED F9 95 97 E3 EB  ()_'ý¸Ý¨õûÒÙ
E: 26 30 3E 3D ES 92 E7 EF A2 A3 EO E9  +;>=Þ Æþ´óúÓÚ
F: 21 SE 3F 22 Fl CF A9 F2 E4 98 ES 20  !^?"±¤®_õÿÕ

RAN  OK
ROM  OK
```

APPENDIX A-2

Anhang A-2 / Appendice A-2 / Appéndice A-2 / Appendice A-2

Display Station Setup Mode
Die Bildschirmanzeige sieht etwa so aus
Mode de configuration de poste d'affichage
Modo de configuración desde un terminal de pantalla
Modalità impostazione da videoterminaie

```
                    Epson ESC/P2 Setup Screen    Version 0.1
Printer Sharing Timeout (seconds) . . . . . . . . :08
Language.............................:00MULTI
Alternate Delimiters (EBCDIC).........:
Parallel port Initialization (ASCII):

User Defined String (ASSCII):
 U0
U1  ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬
U2  ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬
u3  ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬
u4  ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬
u5  ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬
u6  ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬
u7  ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬
Character Set Option: Code Page 650 Print Complete: Early .
Laser Feed Options..: Normal
Address (SWI-3) ..............: 4
Letter Quality Emulation (SW4).: No
Buffer Print (SW5) ............: No        Up,Down Arrows = Change Selection
Default - NLQ (SW6) ...........: No        Field Exit, Field l = Down
Front Panel override (SW7) .....: No       Back Tab, Field - - Up
5224 Emulation (Zi) ...........: No        Backspace = Delete Character
FX Comnands (J6) ..............: Yes       Enter - Save Parameters
```

APPENDIX A-3

Anhang A-3 / Appendice A-3 / Apéndice A-3 / Appendice A-3

Font IDs
Schrinhtypen-10
ID de police
Identificaciòn de fonts
Identificativi di font

Typaface	symbol Bet	Orient.	Pitch	Point Size	Typestyle Number
Resident					
Courier	R-8	P/L‘	10	12	1 1
Courier Bold	R-8	P/L	10	12	46
Line Printer	R-8	P/L	13.3	8.5	201
Line Printer	R-8	P/L	15	8.5	223
Line Printer	R-8	P/L	17.1	8.5	254
Line Printer	R-8	P/L	19	8.5	282
Epson Cartridges					
5410					
Time	R-8	P	Prop.	8	157
Time	R-8	P	prop.	10	158
Time Bold	R-8	P	Prop.	10	159
Time Italic	R-8	P	prop.	10	155
Helvetica Bold	R-B	P	Prop.	14.4	34126
5411					
Courier Bold	u-a	P/L	10	12	46
Courier Italic	R-B	P/L	10	12	18
5412					
Prestige	R-a	P/L	12	10	86
Prestige Bold	R-a	P/L	12	10	111
Prestige Italic	R-B	P/L	12	10	112
5413					
Letter Gothic	R-B	P/L	12	12	87
Letter Gothic Bold	R-B	P/L	12	12	110
Letter Gothic Italic	R-a	P/L	12	10	112

Typeface	Symbol set	orient.	Pitch	Point size	Typestyle Number
5414					
Helvetica	ASCII	P	Prop.	6	181
Helvetica	ASCII	P	Prop.	0	183
Helvetica Bold	ASCII	P	Prop.	8	182
Helvetica Bold	ASCII	P	Prop.	10	185
Helvetica Bold	ASCII	P	Prop.	12	188
Helvetica Bold	ASCII	P	Prop.	14	190
Tax Line Draw	LinDrw-7	P	10	12	34
5430					
Letter Gothic	R-8	P	10	14.4	40
Letter Gothic	R-8	P	17.1	9.4	255
OCR-A 10N	OCR-A	P	10	12	19
OCR-E 10N	OCR-B	P	10	12	3
Code 3-9 4.6N	3 of 9	P	4.6	12	240
Code 3-9 9.3N	3 of 9	P	9.3	12	61
EAN/UPC Bold Bar Code	UPC	P	Prop.	12	171
EAN/UPC Bar Code	UPC	P	Prop.	12	170
HP cartridges					
Procollection					
Line Printer	ASCII	P/L	17.1	8.5	253
Courier Bold	ASCII	P/L	10	12	45
Courier Italic	ASCII	P/L	10	12	17
Courier	ASCII	P/L	12	10	85
Courier Bold	ASCII.	P/L	12	10	108
Courier Italic	ASCII	P/L	12	10	92
Courier	Legal	P	10	12	51
Courier Bold	Legal	P	10	12	52
Courier Italic	Legal	P	10	12	53
Courier	Legal	P	12	10	93
Courier Bold	Legal	P	12	10	94
Courier Italic	Legal	P	12	10	95
Prestige Elite	ASCII	P/L	15	7	220
Prestige Elite	ASCII	P/L	12	10	83
Prestige Elite Bold	ASCII	P/L	12	10	113
Prestige Elite Italic	ASCII	P/L	12	10	114
Prestige Elite	Legal	P	15	7	219
Prestige Elite	Legal	P	12	10	97
Prestige Elite Bold	Legal	P	12	10	98
Prestige Elite Italic	Legal	P	12	10	99
Letter Gothic	ASCII	P/L	27	3.6	291
Letter Gothic	ASCII	P/L	19	6	281
Letter Gothic	ASCII	P/L	17.1	9.5	257
Letter Gothic	ASCII	P/L	12	12	66
Letter Gothic Bold	ASCII	P/L	12	12	69
Letter Gothic Italic	ASCII	P/L	12	12	69
Times Roman	ASCII	P	Prop.	8	163
Tines Roman	ASCII	P	Prop.	10	164
Times Roman Bold	ASCII	P	Prop.	10	165
Times Roman Italic	ASCII	P	Prop.	10	166
Times Roman	ASCII	P	Prop.	17	167
Times Roman Bold	ASCII	P	Prop.	12	168
Times Roman Italic	ASCII	P	Prop.	12	169
Times Roman	Legal	P	Prop.		173
Times Roman	Legal	P	Prop.	10	174
Times Roman Bold	Legal	P	Prop.	10	175

Typeface	symbol set	Orient.	Pitch	Point size	Typestyle Number
Times Roman Italic	Legal	P	Prop.	10	176
Times Roman	Logal	P	Prop.	12	177
Times Roman Bold	Logal	P	Prop.	12	170
Times Roman Italic	Legal	P	Prop.	12	179
Helvetica	ASCII	*P*	prop.	8	*183*
Helvetica	ASCII	P	Prop.	10	184
Helvetica Bold	ASCII	*P*	Prop.	10	185
Helvetica Italic	ASCII	*P*	Prop.	10	186
Helvetica	ASCII	P	Prop.	12	187
Helvetica Bold	ASCII	P	Prop.	12	188
Helvetica Italic	ASCII	P	Prop.	12	189
Helvetica Bold	ASCII	P	Prop.	14	190
Helvetica Bold	Legal	P	Prop.	14	191
WordPerfect					
CG Times	DskTop	P	prop.	6	4685
CG Times	DskTop		Prop.	8	4686
CG Times Bold	DskTop	P	Prop.	8	4706
CG Times Italic	DskTop	P	Prop.	8	4814
CG Times	DskTop	P	Prop.	10	4607
CG Times Bold	DskTop	P	Prop.	10	4707
CG Times Italic	DskTop	P	Prop.	10	4815
CG Times	DskTop	P	Prop.	12	4688
CG Times Bold	DskTop	P	Prop.	12	4708
CG Times Italic	DskTop	P	prop.	12	4816
CG Times	DskTop	P	Prop.	14	4689
CG Times Bold	DskTop	P	Prop.	14	4709
CG Times Italic	DskTop	P	Prop.	14	4817
CG Times Bold	DskTop	P	Prop.	18	4711
CG Times Bold	DskTop	P	Prop.	24	4714
Univers	DskTop	P	Prop.	14	4709
Univers	DskTop	P	Prop.	18	4791
Univers	DskTop	P	Prop.	24	4794
icrosoft					
Helv	R-8	P	Prop.	8	34102
Helv	R-8	P	Prop.	10	34103
Helv Bold	R-8	P	Prop.	10	34123
Helv Italic	R-8	P	Prop.	10	34231
Helv	R-8	P	Prop.	12	34104
Helv Bold	R-8	P	Prop.	12	34124
Helv Italic	R-8	P	Prop.	12	34232
Helv Sold	R-8	P	Prop.	14	34125
TmsRmn	R-8	P	Prop.	8	5686
TmsRmn	R-8	P	Prop.	10	5607
TmsRmn Bold	R-8	P	Prop.	10	5707
TmsRmn Italic	R-8	P	Prop.	10	5815
TmsRmn	R-8	P	Prop.	12	5680
TmsRmn Bold	R-8	P	Prop.	12	5708
TmsRmn Italic	R-8	P	Prop.	*12*	5816
TmsRmn Bold	R-8	P	Prop.	14	5709
Line Printer	R-8	P/L	15	8.5	223

Typeface	symbol Set	Orient.	Pitch	Point Size	Typestyle Number
Polished Worksheets					
Prestige Elite	R-8	P/L	15	7	221
Prestige Elite	R-8	P/L	12	10	86
Prestige Elite Bold	R-8	P/L	12	10	111
Prestige Elite Italic	R-8	P/L	12	10	112
Prestige Elite	Legal	P/L	15	7	219
Prestige Elite	Legal	P/L	12	10	97
Prestige Elite Bold	Legal	P/L	12	10	98
Prestige Elite Italic	Legal	P/L	12	10	99
Letter Gothic	R-8	P/L	27	3.6	290
Letter Gothic	R-8	P/L	12	12	87
Letter Gothic Bold	R-8	P/L	12	12	110
Letter Gothic Italic	R-8	P/L	12	12	109
Letter Gothic	Legal	P/L	27	3.6	292
Letter Gothic	Legal	P/L	12	12	90
Letter Gothic Bold	Legal	P/L	12	12	107
Letter Gothic Italic	Legal	P/L	12	12	106
Presentation Bold	ASCII	P/L	8.1	16	434
Presentation Bold	Legal	P/L	8.1	16	431
Persuasive Presentations					
Letter Gothic	ASCII	P/L	10	14	39
Letter Gothic	Legal	P/L	10	14	38
Presentation Bold	ASCII	P/L	10	14	6
Presentation Bold	Legal	P/L	10	14	7
Presentation Bold	ASCII	P/L	8.1	16	434
Presentation Bold	Legal	P/L	8.1	16	431
Presentation Bold	ASCII	P/L	6.5	18	435
Presentation Bold	Legal	P/L	6.5	18	432
Presentation Bold	ASCII	P/L	5.7	24	436
Presentation Bold	Legal	P/L	5.7	24	433
Helv Outline	ASCII	P/L	Prop.	24	34115
Helv Outline	Legal	P/L	Prop.	24	34116
serifa	ASCII	P/L	Prop.	24	34215
Serifa	Legal	P/L	Prop.	24	34216
Line Draw	LinDrw	P/L	10	14	31
PC Line Bold	PCLin	P/L	10	14	32
Forms, Etc.					
Univers	R-8	P/L	Prop.	6	33101
Univers	R-8	P/L	Prop.	8	33102
Univers Bold	R-8	P/L	Prop.	8	33122
Univers Bold	R-8	P/L	Prop.	10	33123
Univers Bold	R-8	P/L	Prop.	12	33124
Univers Bold	R-8	P/L	Prop.	14	33125
Helv Cond. Black Bold	TaxNum	P/L	Prop.	24	34128
OCR-A	OCR-A	P	10	12	19
Tax Line Draw	TaxLinDnd	P/L	10	12	30

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle Number
Dar Codes & More					
Letter Gothic	R-8	P/L	15	9.5	230
Letter Gothic	R-8	P/L	12	12	87
Letter Gothic	R-8	P/L	10	14	40
OCR-A	OCR-A	P	10	12	19
OCR-B	OCR-B	P	10	12	3
Code 3 of 9	3 of 9	P	8.1	12	60
Code 3 of 9	3 of 9	P	4.6	12	240
EAN/UPC 10 Mil	UPC	P	Prop.	12	170
BAN/UPC 13 Mil Bold	UPC		Prop.	12	171'
USPS Zip	ZIP	P/L	Prop.	12	172
Line Draw	LinDrw	P/L	10	12	33
Text Equations					
Prestige Elite	R-8	P	15	7	221
Prestige Elite	R-8	P	17.1	7	256
Prestige Elite	R-8	P	12	10	86
Prestige Elite Bold	R-8	P	12	10	111
Prestige Elite Italic	R-8	P	12	10	112
	R-8	P	Prop.	8	157
CG Times	R-8	P	Prop.	10	158
CG Times Bold	R-8	P	Prop.	10	159
CG Times Italic	R-8	P	Prop.	10	155
Global Text					
CG Century Schoolbook	R-8	P/L	Prop.	8	16950
CG Century Schoolbook	R-8	P/L	Prop.	10	16951
CG Century Schlbk Bld	R-8	P/L	prop.	10	16971
CG Century Schlbk It1	R-8	P/L	Prop.	10	17079
CG Triumvirate	R-8	P/L	Prop.	10	33335
CG Triumvirate Bold	R-8	P/L	Prop.	14	33357
Pretty Faces					
Microstyle	ASCII	P	Prop.	18	5910
Microstyle Bold	ASCII	P	Prop.	36	5920
Hobo Medium	ASCII	P	Prop.	30	5930
Hobo Medium	ASCII	P	Prop.	14	5940
Thunderbird	ASCII	P	Prop.	54	5950
Signet Roundhand	ASCII	P	Prop.	18	5960
Signet Roundhand	ASCII	P	Prop.	14	5970
ITC Dingbats	ITC	P	Prop.	36	5980
ITC Dingbats	ITC	P	Prop.	18	5990

APPENDIX A-4

Anhang A-4 / Appendice A-4 / Apéndice A-4 / Appendice A-4

Sample printouts - Hex Print
Oruckmuster - Sedezimaldruck
Exemples d'impression - Impression Hexodécimale
Ejemplos de impresión - Impresión hexadecimal
Esampl di stampa - Stampa esadacimale

```
01   0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
0   oc
```

```
00  0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
0   2B C6 02 OC 2B D2 04 29 00 OA 2B D1 03 81 00 2B      .F...K.....J.a..
1   C1 02, 04 2B C2 D2 42 2B CB 03 40 01                 A.d.B.&.H. .
```

```
01  0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
0   C1 C2 C3 C4 C5 C6 C7 C8 C9 Dl D2 D3 D4 D5 D6 D7    ABCDEFGHIJKLMNOP
1   D8 D9 E2 E3 E4 E5 E6 67 E8 E9 40 40 40 40 40 40    QRSTUVWXYZ
2   40 40 40 F0 Fl F2 F3 F4 F5 F6 F7 F8 F9 40 40 40      0123456789
3   40 40 40 40 40 40 81 82 83 84 85 86 87 88 89 91        abcdefghij
4   92 93 94 95 96 97 98 99 A2 A3 A4 A5 A6 A7 A8 A9    klmnopqrstuvwxyz
5   40 40 40 40 40 40 40 40 40 40 4A 4B 4C 4D 4E 4F              [.<(+!
6   50 5A 5B 5C 5D 5E 5F 60 61 6A 6B 6C 6D 6E 6F 79    &]$*);^-/|,%_>?`
7   7A 7B 7C 7D 7E 7F 9F A1 CO DO E0 40 40 40 40 40    :/@'=“a“{}\
8   40 40 40 40
```

```
00  00    2  3  4  5  6  7  8  9  A  8  C  D  E  F
0   c2 C2 C4 C5 C6 C7 c8 69 D1 D2 D3 D4 D5 D6 D7 D8    BCDEFGHIJKLMNOPQ
1   D9 E2 EJ E4 E5 E5 E7 EB E9 40 40 40 40 40 40 40    RSTUVWXYZ
2   40 40 40 F1 F2 F3 F4 F5 F6 F7 F8 F9 40 40 40 40      0123456789
3   40 40 40 40 40 40 82 83 84 85 86 97 88 89 91 92        abcdefghijk
4   93 94 95 96 97 98 99 A2 A3 A4 A5 A6 Al Al A9 40    lmnopqrstuvwxyz
5   40 40 40 40 40 40 40 40 40 4A 4B 4C 4D 4E 4F 50              [.<(+!&
6   5A 51 5B SD 5D 5E 60 6l 6A 6B 6C 6D 6E 6F 79 7A    ]$*);^-/|,%_>?`:
7   7B 7C 7C 7E 7F A1 A, co DO EO 40 40 40 40 40 40    /@'=“a“{}\
8   40 40 40 40 c1                                       A
```

```
01  0  1  2  3  4  5  6  7  6  9  A  a  C  D  E  F
0   C3 c4 C5 Cb c7 C8 C9 Dl D2 D3 D4 D5 D6 D7 DO D9    CDEFGHIJKLMNOPQR
1   E2 E3 E4 ES Eb E7 E8 E9 40 40 40 40 40 40 40 40    STUVWXYZ
2   40 FO F1 F2 F3 F4 F5 F6 F7 FB F9 40 40 40 40 40      0123456789
3   40 40 40 40 40 81 83 84 85 86 87 80 99 91 92 93        abcdefghijkl
4   94 95 96 97 98 99 A2 A3 A4 AS A6 Al AB A9 40 40    mnopqrstuvwxyz
5   40 40 40 40 40 40 40 40 4A 4B 4c 4D 4E 4F SO SA              [.<(+!&]
6   5B 5c 5D 5E 5F 60 6l 6A 6B 6C 6D 6E 6F 79 7A 7B    $*);^-/|,%_>?`:/
7   7c 7D 7E 9F Al CO DO EO 40 40 40 40 40 40 40 40    @'=“a“{}\
6   40 40 C1 C2                                          AB
```

```
00  0  1  2  3 4  5  6  7  8  9  A  B  C  D  E  F
0   C4 c4 Cb c7 c8 c9 Dl D2 D3 D4 D5 D6 D7 D8 D9 E2    DEFGHIJKLMNOPQRS
1   E3 E4 E5 E6 E7 E8 E9 40 40 40 40 40 40 40 40 40    TUVWXYZ
2   FO FI F2 F3 F4 F5 F6 F7 F8 F9 40 40 40 40 40 40      0123456789
3   40 40 40 81 82 83 84 85 86 97 88 89 91 40 93 94        abcdefghijklm
4   95 95 91 90 99 A2 A3 A4 A5 A6 A7 Al A9 40 40 40    nopqrstuvwxyz
5   40 40 40 40 40 40 40 4A 4B 4 C 4D 4E 4F 50 5A 51            [.<(+!&]$
6   5C 5D 5E 5E 60 61 6A 6B 6C 6D 6E 6F 79 7A 7B 7C    *);^-/|,%_>?`:/@
7   7D 7D 7F 7F Al co DO E0 40 40 40 40 40 40 40 40    '=“a“{}\
8   40 Cl c2 C3                                          ABC
```

```
01  0  1  2  3  4  5  6  1  8  9  A  B  C  D  E  F
0   C5 C6 C7 C8 C9 Dl D2 D3 D4 D5 D6 D7 D8 D9 E2 E3    EFGHIJKLMNOPQRST
I   E4 E5 E6 E7 E8 E9 40 40 40 40 40 40 40 40 40 FO    UVWXYZ          0
2   Fl F2 F3 F4 F5 F6 F7 F8 F9 40 40 40 40 40 40 40    123456789
```

APPENDIX A-5

Anhang A-5 / Appendice A-5 / Apédice A-5 / Appendice A-S

Sample printouts - PC850 character set
Druckmuster - Zeichentabelle PC850
Examples d'impression - Table de caractères PC 850
Ejemplos de impresion - Tabla de caracteres PC 850
Esempi di stampa - Tabella dei caratteri PC 850

EBCDIC to ASCII Translate Table

	40	50	60	70	80	90	A0	BO	CO	DO	EO	FO	
0:	20	26	2D	9B	9D	F8	E6	BD	7B	7D	5C	30	&-øØ°µ¢{}\0
1:	20	82	2F	90	61	6A	7E	9C	41	4A	00	31	é/Éaj¯£AJ-1
2:	83	88	B6	D2	62	6B	73	BE	42	4B	53	32	âêÂÊbks¥BKS2
3:	84	89	8E	D3	63	6C	74	FA	43	4C	54	33	äëÄËclt·CLT3
4:	85	8A	B7	D4	64	6D	75	9F	44	4D	55	34	àèÀÈdmuƒDMU4
5:	A0	Al	B5	D6	65	6E	76	F5	45	4E	56	35	áíÁÍenv§ENV5
6:	C6	8C	C7	D7	66	6F	77	F4	46	4F	57	36	ãîÃÎfow¶FOW6
7:	86	8B	8F	D8	67	70	78	AC	47	50	58	37	åïÅÏgpx¼GPX7
8:	87	8D	80	DE	68	71	79	AB	48	51	59	38	çìÇÌhqy½HQY8
9:	A4	El	A5	60	69	72	7A	F3	49	52	5A	39	ñßÑ`irz¾IRZ9
A:	5B	5D	7C	3A	AE	A6	AD	AA	2D	FB	FD	FC	[]¦:«ª¡¬-¹²³
B:	2E	24	2C	23	AF	A7	A8	B3	93	96	E2	EA	.$,#»º¿¯|óûÔÛ
C:	3C	2A	25	40	DO	91	Dl	EE	94	81	99	9A	<*%@ðæÐ¯öüÖÜ
D:	28	29	5F	27	EC	F7	ED	F9	95	97	E3	EB	()_'ý¸Ý¨òùÒÙ
E:	2B	3B	3E	3D	E8	92	E7	EF	A2	A3	E0	E9	+;>=Þ Æþ´õúÓÚ
F:	21	5E	3F	22	Fl	CF	A9	F2	E4	98	E5	20	!^?"±¤®_õÿÕ

APPENDIX A-6

Anhang A-6 / Appendice A-6 / Apéndice A-6 / Appendice A-6

Sample printouts - HP Roman 8 character set
Druckmuster - Zeichentabeile HP Roman 8
Exemples d'impression - Table de caractéres HP Roman 8
Ejemplos de impresión - Tabla de caracteres HP Roman 8
Esempi di stampa - Tabella dei caratteri HP Roman 8

EBCDIC to ASCII Translate Table

	40	50	60	70	80	90	A0	BO	CO	DO	EO	FO	
0:	20	26	2D	D6	D2	B3	F3	5E	7B	7D	5C	30	&-ØØ°µ^{}\0
1:	20	C5	2F	DC	61	6A	7E	BB	41	4A	20	31	é/Éaj~£AJ 1
2:	CO	Cl	A2	A4	62	6B	73	BC	42	4B	53	32	âêÂÊbks¥BKS2
3:	CC	CD	D8	A5	63	6C	74	F2	43	4C	54	33	äëÄËclt·CLT3
4:	C8	C9	Al	A3	64	6D	75	BE	44	4D	55	34	àèÀÈdmuƒDMU4
5:	C4	D5	E0	E5	65	6E	76	BD	45	4E	56	35	áíÁÍenv§ENV5
6:	E2	Dl	El	A6	66	6F	77	F4	46	4F	57	36	ãîÃÎfow¶FOW6
7:	D4	DD	DO	A7	67	70	78	F7	47	50	58	37	åïÅÏgpx¼GPX7
8:	B5	D9	B4	E6	68	71	79	F8	48	51	59	38	çìÇÌhqy½HQY8
9:	B7	DE	B6	A9	69	72	7A	F5	49	52	5A	39	ñßÑ`irz¾IRZ9
A:	BF	21	7C	3A	FB	F9	B8	5B	20	31	32	33	¿!|:«ª¡[-123
B:	2E	24	2C	23	FD	FA	B9	5D	C2	C3	DF	AE	.$,#»º¿]ôûÔÛ
C:	3C	2A	25	40	E4	D7	E3	B0	CE	CF	DA	DB	<*%@ðæÐ¯öüÖÜ
D:	28	29	5F	27	B2	20	Bl	AB	CA	CB	E8	AD	()_'ý Ý¨òùÒÙ
E:	2B	3B	3E	3D	F0	D3	Fl	27	C6	C7	E7	ED	+;>=ÞÆþ'óúÓÚ
F:	7C	SE	3F	22	FE	BA	20	5F	EA	EF	E9	20	|^?"±¤ _õÿÕ

EPSON OVERSEAS MARKETING LOCATIONS

EPSON AMERICA, INC.
20770 Madrona Avenue
Torrance CA 90503, U.S.A.
Phone: (310) 782-0770
Fax: (310) 762-5246

EPSON DEUTSCHLAND GmbH
Zülpicher StraBe 6.
4000 Oüsseldorf 11 F.R. Germany
Phone: (02 11) 56030
Telex: 9564786

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Telex: 5162467

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92300, Levallois-Perret, France
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Taipei. Taiwan, R.O.C.
Phone: (02) 7 17-7360
Fax: (02) 712-9I64

EPSON ITALIA S.p.A.
V.le F. lli Casiraghi 427
20099 Sesto S. Giovanni
MI. Italy
Phone: 2-262331
Fax: 2.2440750

EPSON IBERICA S.A.
Av. de Roma. 16-26
08290 Cerdanyola del Valles
Barcelona, Spain
Phone: 562.15.00
Fax: 582.1565

SEIKO EPSON CORPORATION (Hirooka Office)
80 Harashinden. Hirooka
Shiojiri-shi. Nagano-ken
399-07 Japan
Phone: (0263) 52-2652

EPSON